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Energy Efficiency in EPA's Clean Power Plan

a brief introduction

Steven R. Schiller, Senior Advisor/Affiliate

Lawrence Berkeley National Laboratory

http://emp.lbl.gov

srschiller@lbl.gov

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Disclaimers

- This presentation and any comments or opinions expressed are those of the presenter and NOT those of the WECC, WREGIS, US E.P.A., US D.O.E., or LBNL

- With respect to the CPP, with over 3,000 pages of related documents, this is an initial summary and interpretation.....

Plan Types and Approaches

- States pick a **mass-** or **rate-based goal approach**
- States submit a "State Plan" for affected EGUs to implement interim and final goals (or the federal plan is implemented)
- Two State Plan types:
  - **Emission standards plan** – includes source-specific requirements ensuring all affected EGUs meet their goals
    - **rate-based goal approach - or**
    - **mass-based goal approach**
  - **State measures plan**– includes a mixture of measures implemented by the state, such as renewable energy standards and efficiency programs
    - **Mass-based goal approach only**

Energy Efficiency Strongly Supported in CPP

CPP encourages states to select energy efficiency as a compliance path

- Under a mass-based approach, energy efficiency automatically "counts" toward compliance and states can use an unlimited amount to help achieve their state goals
- Under a rate-based approach, CPP enables states to get credit for all eligible energy efficiency projects whose electricity savings are documented via EM&V
- The Clean Energy Incentive Program (CEIP) provides additional incentives for early investment in demand-side energy efficiency in low-income communities

Energy Efficiency in the CPP – Rate-Based Approach

- **EE can be used to generate Emission Rate Credits (ERCs) that are used to help meet the rate target**
- **Rate based approaches are where there are significant CPP EM&V and tracking requirements for EE**

CPP Emissions Rate =

$$\frac{\text{(Affected EGU Emissions, lbs/year)}}{\text{(Affected EGU Generation, MWh/year)} + \text{(ERCs, MWh/year)}}$$

Example:

- Emission = 1,000,000 lbs/year
- Generation = 1,000 MWh/year
- Emission rate = 1,000 lbs/MWh
- Target = 800 lbs/MWh
- ERCs required = 250 MWh/yr ➡ CPP Rate = 800 lbs/MWh

Energy Efficiency in the CPP – Rate Based Approach (continued)

- *Reminder: Only emission standard plans use rate-based approaches (not state measure plans)*
- *In proposed federal plan there are no end-use efficiency ERCs*

Some detail from CPP:

> "..a state may implement a **market-based emission trading program**, which enables EGUs to generate and procure [Emission Rate Credits] **ERCs**, a tradable compliance unit representing **one MWh of electric generation (or reduced electricity use)** with zero associated CO_2 emissions."
>
> "…These ERCs may then be used to adjust the reported CO_2 emission rate of an affected EGU when demonstrating compliance with a rate-based emission standard. **For each submitted ERC, one MWh is added to the denominator of the reported CO_2 emission rate, resulting in a lower adjusted CO2 emission rate.**"

Eligible EE for Adjusting CO_2 Emission Rates
Rate Based Approach

- Broadly speaking – all actions must be quantifiable, verifiable, enforceable, non- duplicative and permanent
- "Demand-side EE may include a range of eligible measures, provided that the measures can be quantified and verified in accordance with the EM&V requirements in the emission guidelines…"
- Examples in the CPP documents – "utility" programs, building energy codes, product energy standards, performance contracting, and others

Energy Efficiency in the CPP – Mass-Based Approach

- **EE reduces emissions mass "indirectly".**
- **EE EM&V is less of an issue with mass-based approach, but:**
  - **EE is implemented with complementary programs, which should have their own EM&V plans**
  - **CEIP (early investments) requires EM&V**

From CPP:

- "….incentivizes …. the use of strategies such as RE and demand-side EE as complementary measures that reduce CO_2 emissions."
- "The EPA believes the state measures plan type will provide states with additional latitude in accommodating existing or planned [EE] programs "…. unlike under a rate-based approach, for this latter set of measures there is no need to address and describe these state measures in a state plan submission or quantify and verify …EE MWh of … savings…"

- Reminder: State measure plans are "mass plans", emission standard plans can also be "mass plans"

Early Investments – *slide excerpts from U.S. EPA*

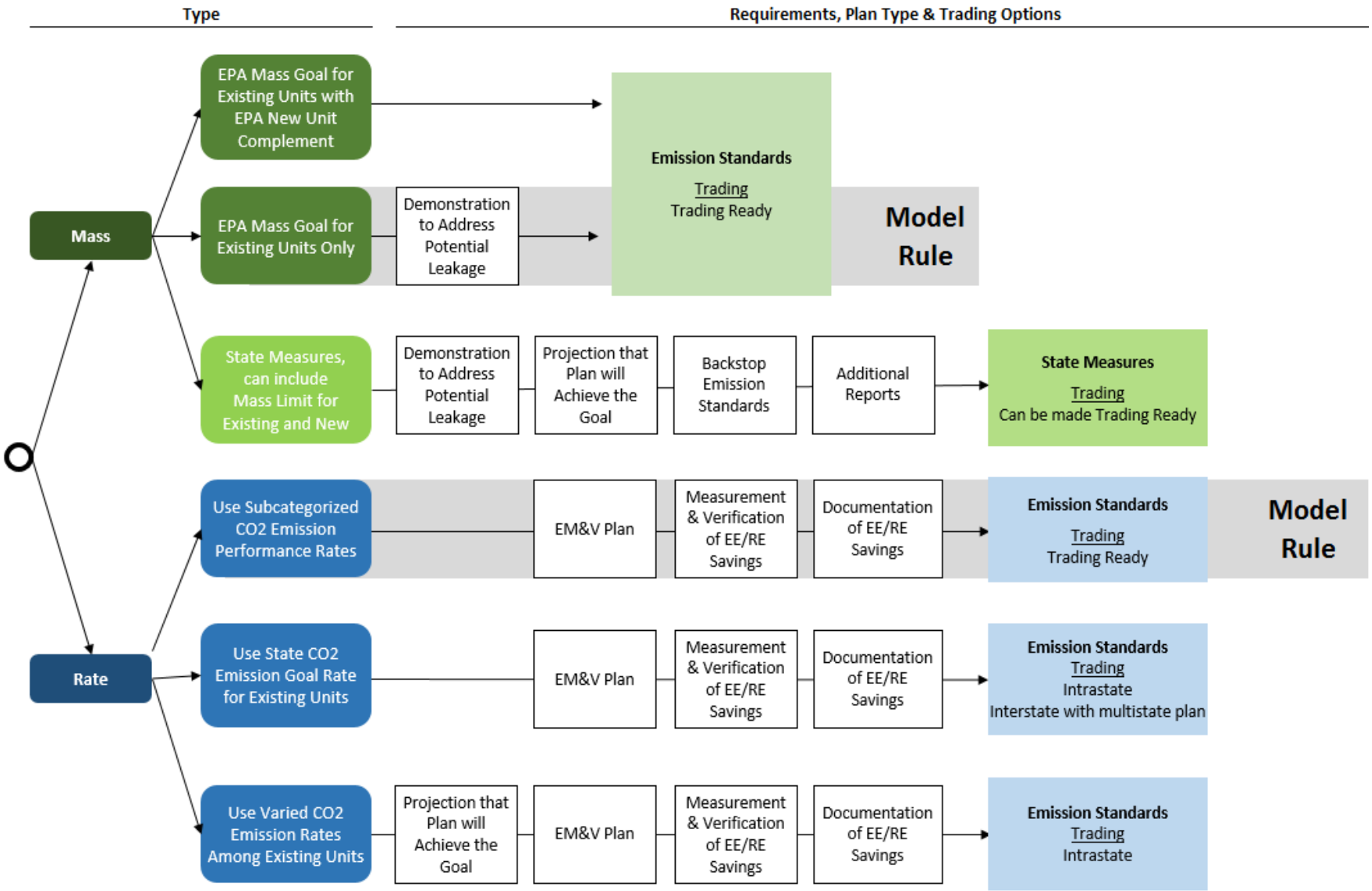
- EPA is providing the Clean Energy Incentive Program (CEIP) to incentivize early investments that generate wind and solar power **or reduce end-use energy demand during 2020 and 2021**
- The CEIP is an optional, "matching fund" program states may choose to use to incentivize early investments in wind or solar power, as well as **demand-side energy efficiency measures that are implemented in low-income communities**
- EPA will provide matching allowances or Emission Rate Credits (ERCs) to states that participate in the CEIP, up to an amount equal to the equivalent of 300 million short tons of CO2 emissions. The match is larger for low-income EE projects, targeted at removing historic barriers to deployment of these measures.
- In addition to the CEIP, states may also offer credit for early investments in RE and demand-side EE according to the provisions of section VIII.K.1 of this final rule: a state may **award ERCs** to qualified providers that **implement projects from 2013 onward** that realize quantified and verified MWh results in 2022 and subsequent years.

How EE/RE Fits in the Clean Power Plan

- slide from U.S. EPA

State Plan Approach		Role of EE/RE in State Plan	State Strategies for EE/RE	EM&V Needed?	Considerations
Emission Standards	Mass	*EE reduces cost, EE/RE lowers CO_2 emissions but are not enforceable or written into the state plan*	• Allocate CO_2 allowances for EE/RE (e.g. through a set aside)	*	* EM&V generally not required for CPP purposes, except for CEIP and set asides specifically created to meet the leakage requirement • Unlimited flexibility with EE/RE implementation
			• Auction allowances, use $ for EE/RE		
			• Secure matching allowances for solar, wind and low-income EE from Clean Energy Incentive Program (CEIP)	✓	
	Rate	*Explicitly written into state plan; Used to generate ERCs and directly adjust reported CO_2 emissions rate of affected EGUs*	• Include EE/RE ERC tracking, trading, and issuance provisions in the state plan	✓	• EM&V plans and M&V reports required • EE/RE is explicitly tracked & credited • Trading-ready plans facilitate broad access to ERCs • EE/RE implemented after 2012 can generate credits starting in 2022
			• Issue ERCs for quantified and verified MWh savings from eligible EE/RE measures	✓	
			• Secure matching ERCs from CEIP for solar, wind, low-income EE	✓	
State Measures	State Demonstration Based on Mass	*Explicitly included as supporting material for state plan – enforceable under state law; State EE/RE policies and measures can be used to help affected EGUs meet mass goal*	• Implement state EE/RE policies and programs (e.g., EERS, RPS, building codes) that are enforceable under state law, either to meet goal or in conjunction with federally enforceable limits	✓*	• Projection of EE/RE impacts required and EGU CO_2 performance required ✓* EM&V Plan for EE/RE measures must be included as supporting material for state plan • Backstop emission standards for affected EGUs if CO_2 reductions don't materialize
			• Secure matching allowances from CEIP for solar, wind and low-income EE	✓	

Summary: Several Pathways for States – *slide from U.S. EPA*



Energy Efficiency EM&V in the CPP

- For the CPP, EM&V is associated with successfully quantifying and verifying savings for purposes of generating emission rate credits (ERCs) and adjusting an emission rate

- EM&V is described in three documents:
  - *Requirements*
    CPP Emissions Guidelines – see Section VIII.K
  - *Presumptively approvable EM&V approaches*
    Proposed model trading rule - see Section IV.D.8.
  - *Applicable guidance*
    EM&V Guidance for Demand-Side EE

EM&V Requirements

Emissions Guidelines (EG) requirements are general and relatively limited, including (see EG for complete list and description):

- State plan would include EM&V plan for quantifying and verifying electricity savings on a retrospective (ex-post) basis using industry best-practice EM&V protocols and methods that yield accurate and reliable measurements of electricity savings.
- Assessment of the independent factors that influence the electricity savings and the expected life of the savings
- Baseline that represents what would have happened in the absence of the demand-side EE activity
- Periodic M&V reports
- Skill certification is also discussed

EM&V Guidance and Model Rule

Cover wide range of EM&V topics, including the following list from CPP EM&V Guidance document:

- EM&V Methods
- Electricity savings metrics and baselines
- Reporting timeframes and considerations
- Deemed savings
- Independent factors
- Accuracy and reliability
- Avoiding double counting
- Persistence of savings
- Savings quantification/verification cycles
- T&D savings adders
- Interactive effects
- EE EM&V Protocols and Guidelines

Also Covered in Guidance and/or Model Rule:

- Tracking and compliance systems
- Independent verification and review
- Additional EM&V guidance for several common EE program and project types
  - Programs implemented using utility customer funds ("utility EE programs")
  - Individual or aggregated EE projects, such as those implemented by ESCOs or at industrial facilities
  - Building energy codes
  - Appliance energy standards
- Glossary of key terms
- Templates for program and project EM&V plans.
- Examples for several common measure types

Trading and Tracking – quick notes

- Trading is allowed, encouraged in the Rule –
  - emission rate credits (for a rate-based standard) or
  - allowances (for a mass-based standard)
- Trading of ERCs, including EE ERCs under Rate Based Approach, can support CPP compliance:
  - Intra-state and Inter-state
  - Final Plan does not require complex air quality modeling to identify location of emission impacts from efficiency nor adjustment or discounting of efficiency impacts that cross state lines.
- This requires implementing "systematic tracking and accounting procedures, including the use of well-structured and well-maintained tracking and reporting systems such as those already being used by many states and EE providers."

Some Efficiency Changes from Proposed to Final

- Emissions reductions from projects installed today that are still achieving quantifiable and verifiable energy savings in 2022 may be applied toward adjusting a CO_2 emission rate during the compliance period.
- Unlike the proposed rule which called for state energy efficiency policies and programs to become federally enforceable if a state didn't meet its goal, the final Clean Power Plan created a state measures approach.
- The CEIP provides an additional incentive for energy efficiency efforts in low-income communities.
- The final Clean Power Plan simplifies interstate accounting for energy efficiency compared to the proposal.

CPP Resources

- Clean Power Plan website:
  http://www2.epa.gov/carbon-pollution-standards

- Specific Documents:
  - CPP Emission Guidelines: http://www.epa.gov/airquality/cpp/cpp-final-rule.pdf
  - Federal Model Plan: http://www.epa.gov/airquality/cpp/cpp-proposed-federal-plan.pdf
  - EM&V Guideline:
    http://www2.epa.gov/cleanpowerplantoolbox/draft-evaluation-measurement-and-verification-guidance-demand-side-energy

- For additional resources to help states develop plans, visit the CPP Toolbox for States: http://www2.epa.gov/cleanpowerplantoolbox

- EPA Overview and energy efficiency presentations:
  http://www2.epa.gov/cleanpowerplan/clean-power-plan-overview-webinar
  http://www2.epa.gov/cleanpowerplan/fact-sheet-energy-efficiency-clean-power-plan

Efficiency Resources

- ACEEE – American Council for Energy Efficiency Economy – non-profit efficiency organization www.aceee.org
- Utility and other program administrator websites (e.g. Northwest Energy Efficiency Alliance – www.neaa.org)
- U.S. DOE Energy Efficiency Office - http://energy.gov/eere/efficiency
- EPA/DOE State and Local Energy Efficiency Action Network (SEE Action)–
  - focuses on providing assistance states need to advance policies and practices that bring energy efficiency to scale. www.epa.gov/cleanenergy/energy-programs/seeaction/

EM&V Resources

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- The Northwest Regional Technical Forum –
  - an advisory committee established to develop standards to verify and evaluate conservation savings. http://www.nwcouncil.org/rtf/about.htm
- Regional EM&V Forum (Northeast and Mid-Atlantic) –
  - supports the development and use of common and/or consistent protocols to evaluate, measure, verify, and report the savings, costs, and emission impacts of energy efficiency. Covers 11 states. http://www.neep.org/emv-forum
- EVO –
  - capacity building for M&V best practices www.evo-world.org

Thank you

Steve Schiller

Senior Advisor
Electricity Markets and Policy Group
Lawrence Berkeley National Laboratory
1.510.486.7780
srschiller@lbl.gov